

## CLAIMS

1. A method for preparing an aerosol of particles having a mass median aerodynamic diameter of less than 1  $\mu\text{m}$  comprising the steps of
  - a) depositing a compound composition on a substrate
  - b) heating said substrate to form a vapor of at least a portion of the composition
  - c) mixing the resulting vapor with a gas, in a ratio to form an aerosol with a mass median aerodynamic diameter of less than 1  $\mu\text{m}$  when a stable number concentration of particles in the gas is reached.
2. The method of Claim 1, wherein said mixing involves passing a gas across the surface of said composition during heating.
3. The method of Claim 1, wherein said mixing involves passing a gas with turbulence across the surface of said composition during heating.
4. The method of Claim 3, wherein said gas is air.
5. The method of Claim 1, wherein the composition is deposited as a thin film.
6. Method of Claim 5, wherein the thin film is of a thickness of less than 10 microns.
7. The method of Claim 6, wherein the thin film is vaporized at a rate of 0.5 to 2 mg/sec.
8. The method of Claim 1, wherein said mass median aerodynamic diameter is between 10 nm and 900 nm.
9. The method of Claim 1, wherein said mass median aerodynamic diameter is between 10 nm and 500 nm.

10. The method of Claim 1, wherein said mass median aerodynamic diameter is between 10 nm and 100 nm

11. The method of Claim 1, wherein said vaporization is complete in less than 2 seconds.

12. The method of Claim 1, wherein said heating is at a rate of at least 1000°C/second.

13. The method of Claim 1, wherein the substrate is metallic.

14. The method of Claim 13, wherein the metallic substrate is stainless steel.

15. The method of claim 1, wherein said heating is resistive or inductive.

16. The method of claim 1, wherein the mass median aerodynamic diameter has a geometric standard deviation of less than 2.

17. The method of claim 1, wherein the stable number concentration of particles in the gas is about  $10^9$  particles/mL.